CLAIMS

What is claimed is:

1. A method for analyzing samples using triboluminescent technology, the method comprising:

placing a sample between an optical window and a membrane of a mechanical activation knot, wherein the membrane applies even pressure to the sample;

supplying a constant pressure of a gas on a zone located between the membrane and the optical window;

rotating the optical window to generate triboluminescence, and resulting optical emissions, from the friction between the sample and the optical window;

directing optical emissions through a device for dividing the spectrum of optical emissions; and

detecting the intensity of optical emissions across the spectrum of optical emissions.

2. The method for analyzing samples using triboluminescent technology of claim 1, further comprising amplifying and digitizing signals of optical emissions that have been detected.

3. The method for analyzing samples using triboluminescent technology of claim 2, further comprising sending digitized signals to a computer.

4. A method for analyzing samples using triboluminescent technology, the method comprising:

providing a system for analyzing samples using triboluminescent technology comprising:

a mechanical activation knot that generates triboluminescence, wherein the mechanical activation knot is further comprised of an optical window, and a membrane;

a device for dividing the spectrum of optical emissions; and

a detector for registration of the optical emissions.

placing a sample between the optical window and the membrane of the mechanical activation knot, wherein the membrane applies even pressure to the sample;

supplying a constant pressure of a gas on a zone located between the membrane and the optical window;

rotating the optical window to generate triboluminescence, and resulting optical emissions, from the friction between the sample and the optical window;

directing optical emissions through the device for dividing the spectrum of optical emissions; and

detecting, using the detector, the intensity of optical emissions across the spectrum of optical emissions.

5. The method of claim 4, wherein said system further comprises a device for amplifying and digitizing detected signals of optical emissions; and said method further comprising amplifying and digitizing signals of optical emissions that have been detected using the amplifying device.

6. The method of claim 5, wherein said system further comprises a computer and said method further comprising sending digitized signals to a computer.

ABSTRACT

An apparatus, method, and system are disclosed to analyze samples materials using triboluminescent technology. A mechanical activation knot is provided that comprises an optical window, a membrane, and a device that supplies a constant pressure of gas on the zone of activation. A sample is placed between the membrane and the optical window. The optical window is rotated along its z-axis. The friction between the sample and the optical window generates triboluminescence and associated optical emissions. Optical emissions may be distributed on the spectrum by a spectrograph, a monochromator, or a

collection of filters, and then fixed by the charge coupled device, a photodiode, or a photomultiplier tube. Then, the results (data) are incorporated into different mathematical algorithms or programs with the help of computers or other computation technologies. The final results (the output) may be compared among themselves or with reference data stored in a computer's memory.